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UNIVERSITY OF TORONTO

Faculty of Dentistry

ANNUAL EXAMINATIONS

1965

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UNIVERSITY OF TORONTO
Faculty of Dentistry

ANNUAL EXAMINATIONS 1965

First Year

BIOCHEMISTRY

Answer FIVE questions ONLY

1. (a) Show the straight chain and ring forms of D-glucose in neutral solution. Circle the hemiacetal hydroxyl group in the ring forms.

   (b) In what way does a hemiacetal hydroxyl group differ from an alcoholic hydroxyl group? Explain with examples.

   (c) Describe the interconversions which take place in an alkaline solution of D-glucose.

2. (a) Match each of the following amino acids with its corresponding class: lysine, alanine, glutamic, arginine, tyrosine, cystine, proline - acidic, basic, neutral, imino, aromatic, sulphur containing.

   (b) List the first three amino acids named above in order of increasing isolelectric pH (pH at isoelectric point).

   (c) Comment on the importance of the last two of the above named amino acids in the folding of the alpha-helical structure of proteins.

3. The Henderson-Hasselbach equation is written as follows:

$$pH = pK + \log \frac{(\text{conjugate base})}{(\text{acid})}$$

   Define carefully all the terms used in this equation. The dissociation constants of citric acid are $10^{-3.1}$, $10^{-4;75}$, $10^{-5.4}$. Over what range of pH can citrate buffers be used?

4. The D-serine dehydratase of Neurospora crassa has been shown to require pyridoxal phosphate as coenzyme.

$$CH_2OH.CHNH_2.COOH \longrightarrow CH_3.CO.\ COOH + NH_3$$

The following figures were obtained in an experiment to determine the pyridoxal phosphate saturation curve of the Enzyme:

micromoles pyruvic acid formed in 20 minutes	pyridoxal phosphate concentration (micromolar)
0.150	0.20
0.200	0.40
0.275	0.85
0.315	1.25
0.340	1.70
0.350	2.00
0.360	8.00

Use these data to determine the Michaelis constant of this enzyme for pyridoxal phosphate.

5. Write brief notes indicating the importance in metabolism of three of the following compounds:

   (a) lipoic acid
   (b) pyridoxal phosphate
   (c) ubiquinone
   (e) uridine diphosphoglucose

6. Describe briefly the reactions involved in the breakdown of fatty acids to acetyl CoA.

7. Discuss the importance of glycolysis in muscular contraction

Chemistry 252 FINAL EXAMINATION Name____________________

250 points January 16, 1965

16 pages

General Instructions

1. Use structural formulas in all answers

2. Read the questions carefully. In many cases you have been given a choice. If all questions are answered, the last ones will be omitted in the grading, so be sure to take advantage of the choice.

3. Check your examination paper to make sure that you have all 16 pages.

I. (60 points) Write equations showing how ten of the following transformations could be carried out. Show all intermediate products, reagents, and catalysts. You may use any other organic or inorganic reagents that you need.

   1. cyclohexanol to 1-methylcyclohexanol

   2. propanal to 2-methyl-2,3-dibromopentanal

   3. benzene to p-diethylbenzene

4. cyclopentanol to 2-cyclopentylethanol

5. benzene to ethyl p-tolyl ketone

6. n-propyl bromide to n-butylamine

7. benzene to p-bromoiodobenzene

8. 2-butanol to 3-methyl-2-pentanone

9. phenol to adipic acid (1,6-hexanedioic acid)

10. toluene to 1-bromo-2-methyl-5-nitrobenzene

11. β-nitronaphthalene to 4-nitrophthalic anhydride

12. benzene to acetanilide

II. (40 points) Discuss fully two of the following topics using appropriate formulas and giving examples. Indicate clearly which topics you have chosen.

A. Hydrogen bonding is important in determining the physical properties of many different classes of organic compounds, some of them of great biological significance.

B. Some substituents make the benzene ring more susceptible to electrophilic attack and cause the new substituent to enter the ortho and para positions while others deactivate the ring and are meta-directing.

C. When optically active 3-methyl-2-pentanone was treated with strong base, the rate of enolization and the rate of racemization were found to be the same.
Explain.

Question II Continued.

Facts Conclusions

III. (30 points) Compound A, $C_5H_8O_3$, dissolves in dilute sodium bicarbonate with the evolution of a gas. It decolorizes bromine in carbon tetrachloride, and gives compound B, $C_5H_8Br_2O_3$. Though it does not give a precipitate with 2,4-dinitrophenylhydrazine reagent, it does give a yellow precipitate with iodine in sodium hydroxide solution. The product of this reaction, compound C, $C_4H_4O_4$, dissolves in sodium bicarbonate, decolorizes bromine, and very readily forms an anhydride on heating Compound A also loses water readily on heating to give compound D, $C_5H_6O_2$. Compound A, B, and D happen to be optically active as well.

1. List at the right the conclusions you can draw from each fact given on the left.
2. Write plausible structural formulas for A,B,C, and D, not neglecting the stereochemistry of the molecules.

IV. (60 points) Use the type equations, structural formulas, or a sentence or two to illustrate or explain twenty of the following terms in organic chemistry.

1. racemic mixture

2. steroid

3. cis-trans isomerism

4. polypeptide

5. reducing sugar

6. carbanion

7. pyranose structure

8. mutarotation

9. isoelectric point

10. enantiomorph

11. detergent

12. conformation

[illegible]

[illegible]

[illegible]

[illegible]

13. chromophore

14. pyrimidine

15. osazone

16. conjugation

17. saponification

18. free rotation

19. thioether

20. disaccharide

21. polymer

22. purine

23. fructose

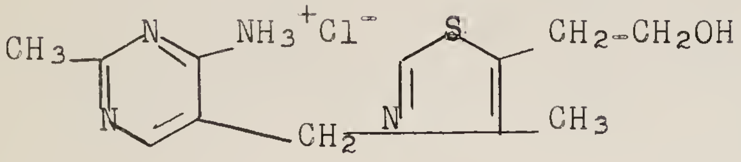
24. denaturation

25. bimolecular nucleophilic substitution

V. (21 points) Write a three dimensional formula showing the proper stereochemistry of L(+) alanine, and explain very clearly what the different stereochemical designations in its name mean. Is the structure that you have assigned to the compound its relative configuration or absolute configuration? Explain.

Draw the stereochemical formula of the enantiomorph of this compound, and give it its proper name.

VI. (14 points). Vitamins are usually classified as fat-soluble and water-soluble. Underneath the structural formulas of the following typical vitamins write which class you expect each one to belong to.



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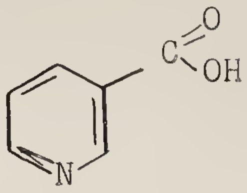

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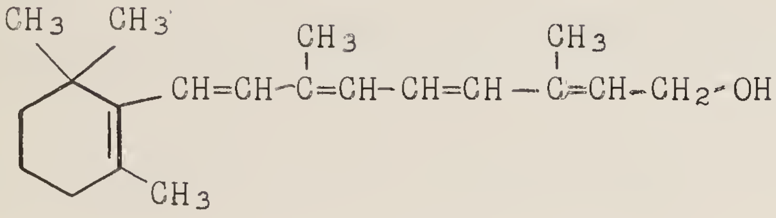

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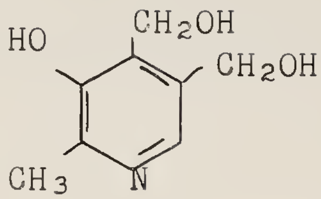

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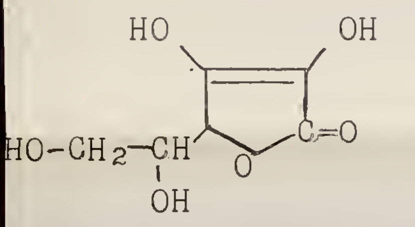

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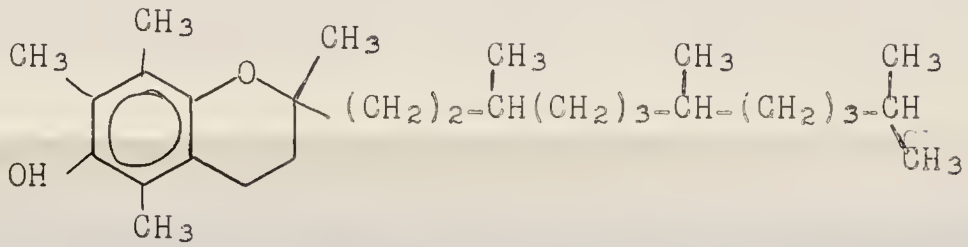

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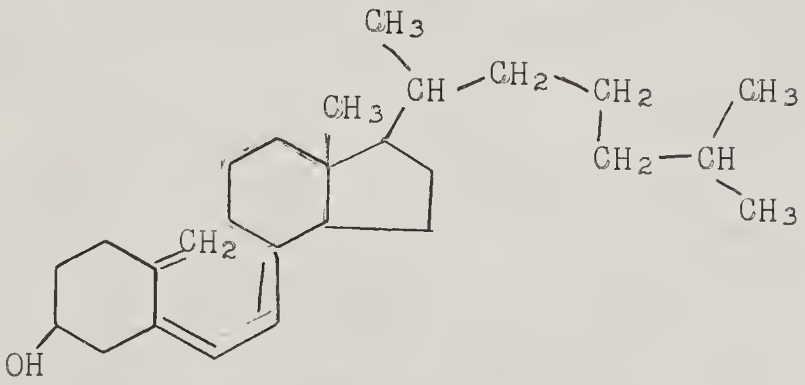

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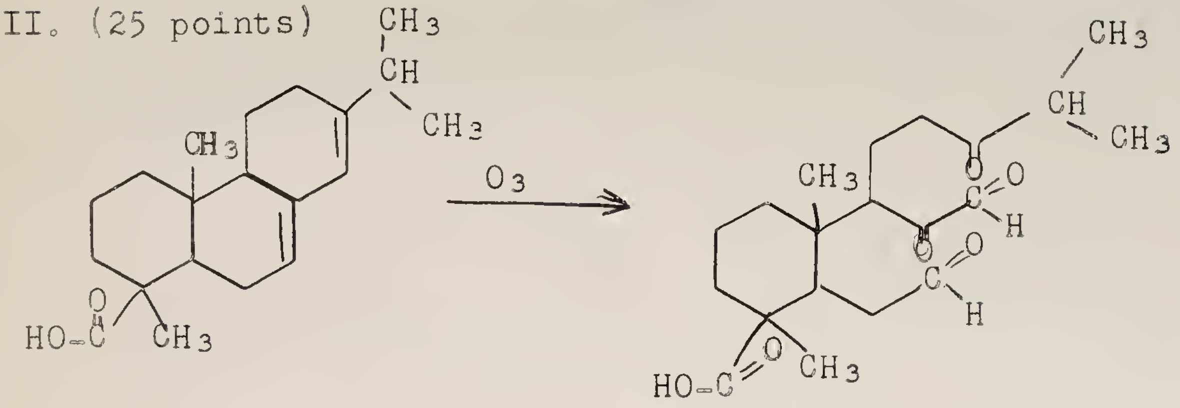
VII. (25 points)



Compound I

Compound II

A. Which class of natural products does compound I belong to?

B. Predict the visual observations that you would make if compound I and compound II were treated with the following reagents in the laboratory. No reaction may take place with some of them. Write your predictions in the appropriate column.

Compound I	Compound II

1. 5% sodium bicarbonate

2. bromine in carbon tetrachloride

3. 2,4-dinitrophenylhydrazine reagent

4. Fehling's solution

5. 1% potassium permanganate solution

6. concentrated sulfuric acid

7. iodine in sodium hydroxide solution

UNIVERSITY OF TORONTO
Faculty of Dentistry

ANNUAL EXAMINATIONS 1965

First Year

DENTAL AND COMPARATIVE DENTAL ANATOMY

Please answer Parts A and B in separate books.

MARKS

PART A - DENTAL ANATOMY

15 1. You are conducting a dental examination on an 8 year old child. Indicate by symbols only:

a) The teeth visible in the oral cavity.
b) The teeth not visible in the oral cavity but developing within the jaws.
c) The teeth with crowns beginning calcification.
d) The teeth with crowns completed.
e) The teeth emerging into the oral cavity.

15 2. With the aid of diagrams briefly describe:

a) The spacing of the primary dentition.
b) The terminal plane classification of the primary dentition.
c) The late mesial shift.
d) The first permanent molar relationship in normal occlusion and in malocclusion.
e) Leeway space.

10 3. You are conducting a dental examination of a patient 35 years of age. There are (1) natural variations (2) systemic acquired variations (3) local acquired variations, and (4) anomalies present. Indicate to which of the four categories the following conditions belong.

a) Supernumerary tooth between the 1/1.
b) Mulberry molars.

MARKS

c) Microndontia
d) Maxillary "peg-lateral" incisor.
e) Fluorosis
f) Gemmate mandibular incisor
g) Six cusps on $\underline{/6}$
h) Turner tooth: Hypoplasia of $\overline{/4}$
i) Three roots on $\underline{4/}$
j) Congenital absence of $\overline{/5}$

25 4. Draw, three times normal size, the mesial views and occlusal views of the $\dfrac{54/}{54/}$, and list the characteristic features that identify each of these teeth.

PART B - COMPARATIVE DENTAL ANATOMY

15 1. Discuss the tritubercular theory of the origin of molarization in mammals, including the amphicone modification. What basic modifications are necessary to produce a typical human lower molar, a rodent's upper molar or the carnassials of a carnivore?

20 2. Identify the following structures by their correct terms or short forms:

a) The buccal 'W'-shaped ridge on an upper molar of a horse.
b) The only teeth that are replaced in an oppossum's dentition.
c) The shearing teeth in the baboon.
d) The condition in the molars and premolars of the Cercopithecidae or Old World Monkeys that prevent their modern relatives from being ancestral to Man.
e) The relationship of the orientation of ridges on molar teeth to the motion of the jaw when chewing.
f) The dental formula of the New World Monkeys.
g) The exaggerated conditions of the permanent cheek teeth of a horse that show its adaptation to grazing.

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First Year

GROSS ANATOMY

MARKS

20 1. Contrast the forebrain and hindbrain portions of the brain stem structurally and functionally.

20 2. Describe the features of the body and processes of the maxilla, indicating relationships to other structures.

20 3. Give a complete account of the parotid region.

20 4. Describe the lingual nerve under the headings:

   a) Course and relations

   b) Connections

   c) Structures supplied

20 5. Write short notes on:

   a) duodenum

   b) oviduct

   c) right atrium of the heart

   d) urethra

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ANNUAL EXAMINATIONS 1965

First Year

MARKS

HISTOLOGY

1. Compare the microscopic structure of the pancreas with that of the parotid gland.

2. How is the structure of the wall of the jejunum related to the functions of the organ?

3. Describe the structure of the thyroid gland.

   Briefly explain how experimental use of radioactive iodine has led to a better understanding of thyroid hormone production.

4. What are the functions of the cells of the enamel organ from initiation of tooth development to eruption?

5. Give the microscopic structure of the periodontal ligament and relate structure to the function of the ligament.

UNIVERSITY OF TORONTO
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ANNUAL EXAMINATIONS 1965

Second Year

BACTERIOLOGY

Each question 10 marks

1. Explain the following terms using appropriate examples:

    (a) pheno type
    (b) passive immunity
    (c) univalent antibody
    (d) adjuvant
    (e) virulence

2. Explain concisely describing the sample, and media, and other laboratory methods, used to isolate and identify the following organisms from the flora of man.

    (a) pneumococcus
    (b) Neisseria catarrhalis
    (c) Corynebacterium Hoffmani
    (d) Lactobacillus

3. Discuss briefly the pathogenesis of dysentery. What are the clinical symptoms and what are the laboratory methods used to confirm the diagnosis.

4. What methods are used in a case of suspected diptheria in respect to:

    (a) isolation of causative organism
    (b) therapeutically
    (c) epidemiologically

5. What are your considerations in respect to: the choice of antibiotics, dosage, length of time, and route of administration for a patient having an abscess and lymphadenitis of the regional lymph nodes.

6. Explain the differences in the clinical symptoms of the first infection and subsequent manifestations of Herpes labialis virus. Give a method to identify this virus.

7. Explain the differences in manifestation of the first vaccination and subsequent revaccination with vaccinia virus.

8. Discuss bacterial or infection hypersensitivity.

9. Answer either A or B

   A. What are the clinical manifestations of Candida infection. What is the laboratory diagnosis.

   B. What are the clinical manifestations of actinomycosis infection and what is the laboratory diagnosis.

10. Write a brief note on any three of the following:

    (a) T.P.I. test
    (b) B.C.G.
    (c) Shick test
    (d) Dick test
    (e) Polio vaccines
    (f) Borrelia recurrentis

UNIVERSITY OF TORONTO
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ANNUAL EXAMINATIONS, 1965

Second Year

GENERAL PATHOLOGY

(All three questions are to be answered.)

1. Discuss pulmonary tuberculosis under the following headings:

    a) Factors influencing the development of the disease.

    b) Gross and microscopic pathology of the lesions.

2. Describe the development of senile gangrene of the foot in terms of aetiology, pathogenesis and ultimate fate.

3. Multiple choice.

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ANNUAL EXAMINATIONS 1965

Second Year

PHYSIOLOGY

Answer only **FIVE** of the seven questions. The questions are of equal value.

1. (a) Discuss the breakdown of the red blood corpuscles in the body, under the following headings:

    i. Sites and modes of destruction
    ii. Rates of destruction.
    iii. Products of destruction.
    iv. Fates of these products.

   (b) Briefly outline the importance in haemostasis of each of the following:

    i. Vascular endothelium.
    ii. Platelets.
    iii. Plasma proteins.

2. (a) Outline the various means whereby salivation is controlled in man.

   (b) Describe and explain the operation of the factors that are involved in the interchange of fluids between blood and tissues.

   (c) Describe and explain how alterations in the factors described in (b) underly the fluid shifts of saliva and lymph flow that occur in secretion by the salivary glands.

3. (a) Discuss the various mechanisms in man that operate to maintain venous return and cardiac output when changing from the lying (recumbent) to the upright (standing) position.

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3. (b) Outline the roles of the plasma proteins in the transport of various substances in blood.

4. (a) Describe briefly the various activities of the kidney tubules, and designate the parts of the nephron associated with these processes.

   (b) Describe and explain the effects in the body of the administration of mineralocorticoids of the adrenal gland, e.g., aldosterone.

5. Write notes on:

   i. Basal metabolic rate.
   ii. Membrane and action potentials in resting and stimulated nerve fibers.
   iii. Characteristics of "spinal" reflex activity.

6. (a) Describe the general types of anoxia (hypoxia) in man, giving for each:

   i. Two examples of conditions that cause these anoxias.
   ii. Alterations in arterial and venous blood that are found.

   (b) Outline and explain the operation of the chemical factors that are involved in the control of respiration.

7. Describe the effects of any TWO of the following in mammals:

   i. Pancreatectomy.
   ii. Thyroidectomy.
   iii. Parathyroidectomy.

UNIVERSITY OF TORONTO
Faculty of Dentistry

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ANNUAL EXAMINATIONS, 1965

Third Year

MARKS

ANAESTHESIA

1. (a) Premedication can be a justifiable adjunct to local anaesthesia in the management of pain control in Dentistry. Discuss the rationale behind this statement.

   (b) Discuss the drugs which you might consider for premedication, being sure to give reasons for your choice of drugs.

2. (a) Classify, according to chemical structure, the more common local anaesthetic agents in use today. State briefly the reason for the necessity of dentists having knowledge of this classification.

   (b) List two reasons or circumstances where each of the agents you have listed might be indicated.

3. A patient faints shortly after the administration of a local anaesthetic. Discuss your approach to this problem under the following headings:

   a) Immediate treatment
   b) Differential diagnosis of cause
   c) Determination of necessity of resuscitative measures, both respiratory and circulatory.
   d) Prevention.

4. Local anaesthesia should always be the anaesthetic of choice for dental procedures. However, not all dental procedures can be carried out under local anaesthesia; nor can all patients be properly handled under local anaesthesia. Briefly discuss some of the circumstances which might indicate a general anaesthetic for conservative dentistry.

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ANNUAL EXAMINATIONS, 1965

Third Year

GENERAL SURGERY

All questions of equal value.

1. A Patient has an acute streptococcal infection (Cellulitis) of soft tissues. Describe the clinical features and treatment.

2. What factors may cause delayed healing in a wound (surgical incision)?

3. Describe the clinical features, pathology and treatment of acute subdeltoid bursitis (bursitis of the shoulder).

4. Describe the clinical features and treatment of basal cell carcinoma (Rodent ulcer).

5. Describe the clinical features of:

   (a) A dermoid cyst lying in the floor of the mouth.

   (b) A branchial cyst.

UNIVERSITY OF TORONTO
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ANNUAL EXAMINATIONS, 1965

Third Year

NUTRITION

MARKS

17 1. List Canada's Food Guide and give for each group:-

(a) examples of foods in the group.

(b) chief nutrients contributed by the group.

(c) relative costs.

Describe briefly how this guide can be used to assess patients' diets.

PREVENTIVE DENTISTRY

Please answer in separate book.

5 1. (a) What is meant by the term "D.M.F. index"?

(b) How is it influenced by age, sex, and water fluoridation?

7 2. Enumerate the processes in which bacteria take part, which lead to the initiation of enamel caries, and indicate what organisms are involved.

MARKS

5 3. Name the chemical agents that are incorporated in different dentifrices with the intention of reducing dental caries, and indicate the effectiveness of each.

3 4. Outline in point form the correct clinical procedure of applying fluoride solution to teeth.

4 5. What are the clinical features which enable a dentist to differentiate between dental caries and erosion?

Answer questions 6, 7 and 8 on separate sheet and enclose in answer book.

Third Dental Year

ORAL PATHOLOGY

No paper available

UNIVERSITY OF TORONTO
Faculty of Dentistry

ANNUAL EXAMINATIONS, 1965

Third Year

MARKS

PERIODONTICS

20 1. For question number one answer two of (a), (b), or (c).

(a) Describe, in concise form, symptoms and signs of dysfunctions of the muscles of mastication and the temporo-mandibular joints.

(b) Discuss steps of examination when dysfunction of the the muscles of mastication and the temporo-mandibular joint are suspected.

(c) Discuss procedures for the treatment of an acute temporo-mandibular joint dysfunction.

10 2. Outline concisely the technique for occlusal correction by grinding as taught in this faculty.

10 3. (a) Make a full page drawing of a labio-lingual longitudinal section of a lower incisor and its supporting structures. Indicate clearly the following: areolar mucosa, alveolar mucosa, mucogingival line, marginal gingiva, cemental gingiva, gingival crevice, epithelial attachment, cuticle, principal fibre bundles, (label) relative thickness of epithelium in various areas.

5 (b) Briefly discuss the histologic difference between the alveolar and areolar mucosa. Why are they a different colour?

MARKS

4 3. (c) Make a high power histologic type labelled drawing showing the details of structure of the epithelial attachment to tooth.

'All drawings must be of sufficient size and clarity that details are legible.'

6 4. (a) List the three basic principles which apply to pocket therapy.

10 (b) Indicate the various types of pockets to which these principles apply.

10 (c) List clearly the available treatment techniques for each type of pocket.

15 5. Discuss briefly three factors which may contribute to calcification of plaque (produce calculus).

10 6. (a) Describe the typical signs and symptoms of acute necrotic gingivitis.

(b) Discuss briefly the clinical management of necrotic gingivitis.

Third Dental Year

PHARMACOLOGY

No paper available

UNIVERSITY OF TORONTO
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Annual Examinations, 1965

FOURTH YEAR #1

RESTORATIVE DENTISTRY

MARKS

Please answer questions 1 and 2 in Book #1, questions 3 and 4 in Book #2, and questions 5, 6 and 7 in Book #3.

20 1. A female patient, 46 years of age, comes to your office shortly after you have graduated and established yourself in practice. She has visited other dental offices but does not seem to be able to get relief from an unpleasant discomfort which, according to her, persists in the upper right maxillary area. The patient is unable to give the exact location from which the discomfort arises. Describe briefly how you would proceed.

15 2. (a) How would you distinguish between pain of pulpal origin and pain of periodontal origin?

(b) When doing restorative operations involving the cutting of tooth tissue with high-speed equipment what precautions are necessary in order to reduce the amount of injury to the pulpal tissue and to the tooth itself?

20 3. Discuss the anatomical landmarks which should be considered in a complete visual, digital and radiographic examination of an edentulous maxilla and mandible before taking the impressions.

10 4. In removable partial denture prosthesis it is generally agreed that stresses applied to the appliance should be within the physiological limits of the supporting structures in order to prevent a breakdown of these structures. Discuss briefly

MARKS

how occlusal forces may be distributed or limited to prevent irritation, traumatism and damage to the remaining natural teeth and ridge tissues.

20 5. A patient has all teeth present except the upper and lower molar teeth. There is a generalized early periodontitis simplex except about the upper right and upper left bicuspids where there are infrabony pockets of 5 to 6 mm. in depth. Food impaction occurs between the upper bicuspid teeth. There is no abnormal mobility of teeth except the upper bicuspids and these latter teeth exhibit mobility one. It is desirable to provide the patient with removable partial dentures to replace the missing upper and lower molar teeth. List, but do not discuss, the proper order of events for the total treatment plan.

5 6. Abnormal mobility of teeth may be related to a number of abnormalities in the periodontium. List these latter abnormalities.

10 7. (a) Outline the classification of periodontal pockets.

(b) Outline the principles which may be involved in the reduction of depth of periodontal pockets.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

UNIVERSITY OF TORONTO
Faculty of Dentistry

ANNUAL EXAMINATIONS, 1965

Fourth Year

Paper #2

MEDICINE

MARKS

20 1. Discuss Rheumatic Heart Disease with special reference to its significance in dental practice.

15 2. Discuss Leukemia under the following headings:

(a) Types
(b) General Manifestations
(c) Oral Manifestations
(d) Laboratory Findings
(e) Treatment

15 3. Write a brief note on:

(a) Infectious Mononucleosis
(b) Serum Hepatitis
(c) Pulmonary Embolism

ORAL DIAGNOSIS

MARKS

15 1. Give brief descriptions of those conditions which may be associated with melanotic pigmentation of the oral mucous membrane.

20 2. Enumerate the section headings of a classical history. Indicate under each heading its importance in the diagnosis of disorders manifested in the mouth. Use one example for each heading.

15 3. Discuss the differential diagnosis of white lesions of the oral mucosa.

UNIVERSITY OF TORONTO
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ANNUAL EXAMINATIONS, 1965

Fourth Year

Paper #3

MARKS

PAEDODONTICS

15 1. (a) Is ectopic eruption of the first permanent molar common in the mandible?

(b) In point form outline a treatment for the following:

i A severe ectopic eruption of the maxillary first permanent molar.

ii A mild ectopic eruption of the maxillary first permanent molar. (The first permanent molar is caught under the contact of the distal surface of the second deciduous molar with no evidence of absorption of the second deciduous molar.)

(c) What is the diagnostic significance of bilateral ectopic eruption of the four permanent lateral incisor teeth?

(d) What is the clinical significance of unilateral ectopic eruption of permanent lateral incisor teeth?

20 2. Name and discuss briefly four factors influencing the physical growth and development of children.

MARKS

15 3. An examination of a seven-year-old patient reveals the following:

(a) Bilaterally the disto-buccal cusps of the maxillary first permanent molars occlude in the buccal grooves of the lower first permanent molars.

(b) Both lower permanent centrals and the lower left permanent lateral have erupted in good alignment.

(c) The lower right deciduous cuspid and deciduous lateral are fused.

(d) Draining sinuses are evident buccal to the lower right first deciduous molar and the upper left second deciduous molar.

(e) The mesial corner of the upper left central has been fractured twenty-four hours before examining the patient. The fracture is slight, in fact barely exposing the dentine. Patient complains of fractured tooth being sensitive to cold.

Outline in point form a satisfactory treatment plan for this patient.

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ANNUAL EXAMINATIONS, 1965

Fourth Year

Paper #4

MARKS

DENTAL RADIOLOGY

16 1. (a) Explain the principles of parallax and discuss its uses in dental radiology.

(b) Utilizing this principle what procedures would be involved in identifying the roots of a two rooted maxillary first bicuspid.

16 2. (a) Describe changes in the pulp chamber and pulp canal which may be detected radiographically.

(b) Discuss the information concerning the roots of teeth which can be obtained from dental radiographs.

18 3. Describe the radiographic appearance of the various neoplasms (benign and malignant), which may involve the bone of the mandible or maxilla.
Do not include the calcified odontomes.
Give the differential interpretation.
Use illustrations where applicable.

- - - - - - - -

ORAL SURGERY AND ANAESTHESIA

1. Illustrate, with diagrams, the surgical flap necessary and describe the surgical procedure for removal of the apical half of fractured roots on a patient aged 60:

7 a) distal root of maxillary right first molar

8 b) mesial root of mandibular left first molar and root of mandibular left first bicuspid.

MARKS

5 2. List conditions in the oral cavity that may require surgical correction before undertaking construction of complete dentures.

5 3. A male patient, aged 50, presents with a swollen left side of face. Mandibular left second molar had ached severely two days previously, but the pain has now somewhat subsided. Describe your management of this surgical problem, including the use of drugs (pre- and post-operatively).

5 4. Briefly state what is meant by the following terms:

trismus
erythromycin
haematoma
ecchymosis
cellulitis
apertognathia
dry socket
ameloblastoma
enostosis
Ranula.

5 5. A pale looking female patient, aged 35, gives a history of a slight loss of weight, fatigue and nervousness. List, in two columns, ten laboratory investigations that may be of interest before undertaking multiple extractions and give normal values.

15 6. A patient in your office lapses into unconsciousness shortly after the administration of a local anaesthetic. The patient was apprehensive prior to the injection, but otherwise appeared normal. Discuss your approach to this emergency under the following general headings:

a) differential diagnosis

b) treatment

c) prevention.

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Fourth Year

Paper #5

MARKS

DENTAL PUBLIC HEALTH

One of the modern concepts of public health is expressed as a positive approach to health.

5 1. State this definition of health and the health agency responsible.

10 2. (a) What factors contribute to the pattern of benefits sought in Canada respecting health care?

10 (b) In consideration of decreasing the need, increasing the utilization and resources for dental care, what recommendations have been made by the Royal Commission on Health Services?

PRACTICE ADMINISTRATION

15 1. What is the proper manner of presenting a diagnosis, treatment plan, and fee to a patient?

10 2. How should a dentist arrive at a fair fee for the services he renders a patient?

PREVENTIVE DENTISTRY

10 1. What measures can be taken to prevent periodontal disease in children?

MARKS

10 2. Briefly discuss the metabolism of fluoride under the following headings:

(a) Storage in skeletal tissue

(b) Excretion

5 3. What are the significant structural and chemical factors of a tooth that determine its susceptibility to dental caries?

ENDODONTICS

10 1. Having completed biomechanical instrumentation and secured negative cultures, describe briefly the procedures which you would follow to obliterate correctly the root canals in a lower first molar, using silver points.

10 2. Describe briefly the technique which you would follow to disclose the root canals of a lower first molar without damaging the floor of the pulp chamber.

5. 3. You decide that the vital pulp of an upper anterior tooth must be extirpated. Describe the precautions which you would follow to reduce to a minimum degree subsequent discolouration of the crown.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

UNIVERSITY OF TORONTO
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First Year Dental Hygiene

BACTERIOLOGY

All questions are of equal value.

1. Explain the following terms using an example in each case.

    (a) spirochete
    (b) medium for growth of bacteria
    (c) infection
    (d) adaptive host defence mechanisms
    (e) a gram positive organism

2. (ε) What are the general pathological properties of bacteria?

    (b) Are these properties always of the same intensity?

3. Explain the use of absorbed sera and adsorbed antigens for the laboratory diagnosis of bacterial diseases.

4. Draw in a properly labeled diagram the relation between the titer of antibodies in the blood stream and time during and after vaccination with a toxoid.

5. (a) Discuss the importance of the A, B, AB, and O blood groups in plasma transfusions, and in blood transfusions.

    (b) When are the M, N, S and R_h blood groups of importance.

6. Explain serum sickness and how can it be prevented.

7. What are the mechanisms involved in the development of an abscess with lymphadenitis caused by staphylococci.

8. Discuss one of the post-streptococcal diseases.

9. How are plaques formed on teeth.

10. Write a short note about any three of the following:

    (a) Coomb's test
    (b) organisms involved in subacute bacterial endocarditis
    (c) Prausnitz-Kustner test
    (d) treatment of hay fever
    (e) impetigo
    (f) scarlet fever
    (g) multiplication of a virus

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First Year Dental Hygiene

DENTAL ORIENTATION

MARKS

8 1. Describe the procedures which would be followed to perform a "General Superficial" oral examination of a patient.

12 2. Define the following terms and indicate which could be delegated to a Hygienist to perform for the patient.

- (a) Examination
- (b) Diagnosis
- (c) Prognosis
- (d) Treatment Planning

30 3. On the accompanying "282" Form, chart the following conditions:

$\begin{array}{r|l} 86 & \\ \hline 1 & 78 \end{array}$ have been extracted

$\overline{8/}$ unerupted

$\underline{/8}$ incomplete eruption 3 mms.

$\underline{7/}$ drifted forward to contact $\underline{5/}$

Recessions: $\overline{/3}$ lingual - 2 mms.

$\underline{/3}$ labial - 3 mms.

Periodontal pockets with the gingival margins at the normal position:

$\overline{/6}$ labial distal - 4 mms.

$\overline{6/}$ labial mesial - 7 mms.

Periodontal pockets with 2 mms. recessions of the gingival margins:

$\underline{3/}$ labial mesial - 3 mms.

$\overline{3/}$ labial distal - 4 mms.

Periodontal pocket with hypertrophy of the gingival margin:

$\overline{/4}$ labial distal - 3 mms.

Mobility $\overline{6/}$ M2 +

Loss of contact $\underline{5 \text{ and } 4/}$ - 2 mms.

Amalgams: $\underline{7/}$ occlusal - mesial pit

$\underline{5/}$ Mesial occlusal distal

$\overline{/6}$ occlusal

$\overline{6/}$ Buccal pit

$\overline{/4}$ Distal occlusal

Silicates $\underline{1 / 1}$ Mesial lingual

$\overline{7/}$ Full gold crown

$\overline{6/}$ Occlusal cement

Fixed bridge from $\overline{2/}$ to $\overline{/1}$ replacing $\overline{1/}$

Cavities $\underline{/2}$ distal lingual

$\underline{/6}$ full occlusal

$\underline{/6}$ Prognosis questionable

$\overline{6/}$ Extraction indicated.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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FACULTY OF PHARMACY AND DENTAL HYGIENE

ANNUAL EXAMINATIONS, 1965
First Year - All Courses

ENGLISH

Examiners - The Staff in English

Answer FOUR questions in all, those in Parts A and B, and one from each of Parts C and D.

PART A (15 Minutes)

Comment specifically upon six of the following characters or places appearing in the works you have studied this year. You should identify each item you discuss, and comment upon its significance in the work in which it appears:

Colonel Sherburn
Harapha
Orlick
Blefuscu
Ben Loman
Actium

Dante
Satis House
Eros
Glumdalclitch
Sir Wilfull Witwoud
Tony Lumpkin

PART B (45 Minutes)

Relate FOUR of the following extracts to their contexts and comment precisely on characteristic or significant qualities of theme, substance OR manner;-

a) "Then of thy beauty do I question make,
That thou among the wastes of time must go,
Since sweets and beauties do themselves forsake
And die as fast as they see others grow:
And nothing 'gainst Time's scythe can make defence,
Save breed, to brave him when he takes thee hence."
(Shakespeare)

b) "She is all States, and all Princes, I,
Nothing else is.
Princes do but play us; compared to this,
All honour's mimic, all wealth alchemy.
Thou, sun art half as happy as we,
In that the world's contracted thus;
Thine age asks ease, and since thy duties be
To warm the world, that's done in warming us."
(Donne)

PART B (continued)

c) "But since, alas! frail beauty must decay,
Curled or uncurled, since Locks will turn to grey;
Since painted, or not painted, all shall fade,
And she who scorns a man, must die a maid;
What then remains but well our power to use,
And keep good humour still whate'er we lose?"
(Pope)

d) "Nor less I deem that there are Powers
Which of themselves our minds impress;
That we can feed this mind of ours
In a wise passiveness."
(Wordsworth)

e) "Then welcome each rebuff
That turns earth's smoothness rough,
Each sting that bids nor sit nor stand but go!
Be our joys three-parts pain!
Strive, and hold cheap the strain;
Learn, nor account the pang; dare, never grudge the throe!

For thence,- a paradox
Which comforts while it mocks,-
Shall life succeed in that it seems to fail:
What I aspired to be,
And was not, comforts me:
A brute I might have been, but would not sink i' the
scale."
(Browning)

f) "Consume my heart away; sick with desire
And fastened to a dying animal
It knows not what it is; and gather me
Into the artifice of eternity."
(Yeats)

PART C (45 Minutes)

(a) "In tragic life, God wot,
No villain need be! Passions spin the plot:
We are betrayed by what is false within."

Discuss this view of tragedy in its application to *Antony and Cleopatra*.

(b) "...the possibility of victory must be there in tragedy. Where pathos rules...a character has fought a battle he could not possibly have won" (Arthur Miller).

Are *Death of a Salesman* and *Samson Agonistes* tragedies in this sense? What chance had Willy Loman and Samson of "winning"?

PART C (continued)

(c) "Both *The Way of the World* and *Death of a Salesman* are directly concerned with a contemporary society. Yet the societies with which they are concerned (and of which they are products) are in many ways radically different." Discuss.

(d) "But deeds, and language, such as men do use,
And persons, such as comedy would choose,
When she would shew an image of the times,
And sport with human follies, not with crimes."

Are *Death of a Salesman* and *She Stoops to Conquer* alike in these respects? If so, why does one result in tragedy and the other in comedy?

PART D (45 Minutes)

(a) *Gulliver's Travels* "is not a reviling of man's indignity, but a passionate plea for the dignity of man, in spite of his loathsome body, his absurd mind, his ridiculous political pretensions, his arrogant ignorance." Comment.

(b) "Swift and Twain see a good deal more than Gulliver and Huck do." Discuss the function of the naive narrator as a satirical device in *Gulliver's Travels* and *The Adventures of Huckleberry Finn*.

(c) "*Great Expectations* and *A Portrait of the Artist as a Young Man* both express the need to break away from one's origins as a prerequisite for freedom and self-development, but the types of freedom sought and the results of the break are in each case very different." Comment.

(d) "Stephen Daedalus' education as artist consists in learning to define through language the parts and essential nature of his world. Huck Finn's education as young man consists in learning to distinguish between the phoney language of the shore and the genuine, sincere language of humanity." Comment.

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First Year Dental Hygiene

FOOD CHEMISTRY

(ALL QUESTIONS ARE OF EQUAL VALUE)

1. (a) What is the meaning of each of the following suffixes when used in naming organic compounds?

"ane", "oic", "ol", "ene", "al", "one".

(b) Give the characteristic formula and an example of each class of compounds indicated by the above suffixes.

(c) Contrast reactions of a lower aldehyde and a lower ketone with respect to three experiments done in the laboratory. Explain the results in each case and use equations when possible.

2. Referring to fats and carbohydrates, with which of the two do you associate each of the following?

(a) formation of acrolein
(b) Achromic point
(c) Barfoed's reaction
(d) iodine number
(e) saponification
(f) Molisch test
(g) rancidity
(h) lactose

Write briefly on any four

3. (a) What are enzymes?

(b) How are they named?

(c) How does (i) temperature and (ii) pH affect their action?

3. (d) List any three digestive enzymes and describe their action.

4. **A.** Define pH.
Compare and explain the effect of a dilution of (i) 10 times and of (ii) 100 times on the pH of the following:
    (a) 0.1N hydrochloric acid
    (b) a sodium acetate-acetic acid buffer solution (pH 4.74)

B. Using the Henderson-Hasselbalch equation ($\mathrm{pH} = \mathrm{pK} + \log \frac{\mathrm{salt}}{\mathrm{acid}}$) explain the efficiency of the above buffer since its salt:acid ratio is 1:1.

5. With respect to proteins -

(a) explain the significance of (i) amino acids (ii) peptide linkages.

(b) Briefly discuss any four of the following:

- (i) Biuret test
- (ii) isoelectric point
- (iii) derived proteins
- (iv) denaturation
- (v) Millon's reaction

(c) What are the food sources of the following - casein, albumin, gelatin?

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ANNUAL EXAMINATIONS, 1965

First Year Dental Hygiene

MARKS

HISTOLOGY

10 1. a) Classify epithelial tissues.
5 b) Define "mucous membrane"
15 c) Make a fully labelled drawing of the raphe area of the hard palate to show its microscopic anatomy.

10 2. a) Classify connective tissues.
15 b) By means of a fully labelled drawing indicate the microscopic anatomy of the periodontal ligament.

15 3. List the age changes that occur in a living tooth and its associated periodontium.

10 4. Relate the microscopic structure of enamel to possible clinical considerations.

10 5. a) Name the parts of a developing tooth bud, and indicate the fate of each.
10 b) Define the terms i. eruption
ii. shedding

50 6. Write short notes on the following and illustrate your answers where possible.

a) Tomes' granular layer
b) Striae of Retzius
c) Hertwig's epithelial root sheath
d) pinocytosis
e) phagocytosis
f) polyploidy
g) mitochondria
h) dental lamina
i) DNA
j) polymorphonuclear leukocyte.

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First Year Dental Hygiene

PRE-CLINICAL TRAINING

MARKS

10 1. How might the appearance of a dental hygienist and her operatory affect a patient?

10 2. How does the proper positioning of the patient in the dental chair aid both the patient and the operator during the performance of clinical procedures?

10 3. Outline the procedures involved in the placement of displacement pack.

10 4. What methods of inspection should you use to evaluate the completed oral prophylaxis?

10 5. You have a patient, 16 years of age, female, for whom you are to do a prophylaxis. Upon examining the patient's mouth, you find a medium amount of dental caries, abundant materia alba and a medium amount of calculus. How would you organize your oral hygiene instruction so that you might stimulate the patient's interest in improving and maintaining good oral hygiene procedures?

First Year Dental Hygiene

PSYCHOLOGY

No paper available

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ANNUAL EXAMINATIONS 1965

Second Year Dental Hygiene

DENTAL PUBLIC HEALTH

All questions are of equal value.

1. (a) Name five items of equipment or supplies required for a dental survey of school children.

   (b) Dental health indices are classified according to five cardinal attributes of dental health. List these five attributes.

   (c) Name five significant characteristics that differentiate dental caries from other human illnesses.

2. (a) List three common methods of sampling from a population.

   (b) List three examples of statistical error due to bias.

   (c) State two ways of reducing the magnitude of sampling error.

   (d) List seven headings under which you would organize a report on a dental survey.

3. (a) State three reasons for conducting a dental survey of school children.

3. (b) Distinguish between the terms "Incidence" and "Prevalence".

   (c) Name two kinds of forms used for recording dental findings in school children.

   (d) Name three ways of illustrating the report of a dental survey.

4. List the duties that the dental hygienist would be expected to perform in a health unit.

   Explain in some detail the nature of one of the duties listed above.

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ANNUAL EXAMINATIONS, 1965

Second Year Dental Hygiene

NUTRITION AND CLINICAL NUTRITION

Please answer questions 1, 2, and 3 in Book #1 and questions 4, 5 and 6 in Book #2.

MARKS

14 1. (a) List and discuss briefly factors influencing the maintenance energy requirement.

(b) How may the total caloric intake (and especially calories contributed by carbohydrate) influence the requirement for specific vitamins.

10 2. Discuss and compare the possible uses and limitations of Canada's Food Guide and the Canadian Recommended Daily Nutrient Intake.

16 3. Briefly discuss any 4 of the following:

Energy value of foods
Biological value of protein
Hypervitaminosis
Nutritional Adaptation
Essential Fatty Acids
Non-specific effects of nutrient deficiencies

15 4. Discuss two methods of dietary control of dental caries giving advantages and disadvantages of each.

MARKS

15 5. For each food group in Canada's Food Guide give at least two foods and discuss their contribution of nutrients and relative costs.

30 6. Write detailed dietary recommendations for the following patients:

(a) A boy 5 years of age with rampant dental caries - Swab test pH 3.6, L. Acidophilus count 120,000; diet poor nutritionally and very high in sweet foods.

(b) A girl 14 years of age - 10 lbs. overweight - high caries susceptibility - Swab 4.0, L. Acidophilus 600,000 - diet only fair nutritionally and rather high in sweet foods. This girl is one of a large family with a very low income.

(c) An adult who is relatively caries immune but whose diet is very low in most of the minerals and vitamins; particularly Ca, vitamins A, C, and the B complex. No economic problem.

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ANNUAL EXAMINATIONS - 1965

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Please answer each Part in a separate book.

MARKS

ORTHODONTICS

25 1. (a) Briefly outline the role of the Hygienist, for the Orthodontic patient, during treatment.

(b) Discuss the problem of controlling finger sucking habits.

PAEDODONTICS

25 1. (a) What is meant by 'The Ugly Duckling' stage in a child's dentition?

(b) What is the cause of this condition?

(c) Is this a normal or an abnormal stage in growth and development?

(d) Could 'The Ugly Duckling' stage occur in a twelve-year-old?

(e) List seven possible causes for a midline diastema of 3 mm. between the maxillary permanent central incisor teeth.

PHARMACOLOGY

10 1. What is meant by the following terms? Give one example of each.

(a) Antibiotic

MARKS

1. (b) Vasoconstrictor

   (c) Caustic

5 2. (a) Name three drugs which may be used for post-operative pain.

   (b) Name two sedative drugs used in dentistry.

10 3. Give one example each of the following types of drugs:

   (a) Parasympathetic depressant
   (b) Respiratory stimulant
   (c) Local anaesthetic
   (d) Disinfectant
   (e) Hemostatic

PREVENTIVE DENTISTRY

6 1. Name the main organic and inorganic constituents of enamel and dentine.

4 2. What influence does the fluoride-carbonate relationship in enamel have on the susceptibility to dental caries?

6 3. What is the meaning and significance of the D.M.F. index?

3 4. Name the inportant components of saliva which form its buffer system.

6 5. State briefly, three main conclusions derived from the"Vipeholm Study" on the cariogenicity of carbohydrates.

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PATHOLOGY AND PERIODONTICS

Please answer Part A and Part B in separate books.

MARKS

Part A - PATHOLOGY

10 1. Define the following terms and give ONE example of each involving dental tissues.

(a) Aplasia
(b) Hypoplasia
(c) Hyperplasia
(d) Metaplasia
(e) Neoplasia

10 2. Describe the gross and microscopic features of the following conditions.

(a) Hereditary dentinogenesis imperfecta
(b) Hereditary amelogenesis imperfecta
(c) Dental fluorosis
(d) Enamel hypoplasia
(e) Dental caries

10 3. List and describe briefly FIVE causes of tooth rescrption.

10 4. Describe the various physical and physiological mechanisms useful in haemostasis.

10 5. List and describe the various possible fates of a thrombus.

MARKS

Part B - PERIODONTICS

1. Discuss recession of gingival tissue under the following headings:

10 (a) Outline causes.

5 (b) Using drawings illustrate effects of local direct causes.

15 (c) Describe treatment and prognosis for recession resulting from three most common causes. Be concise

10 2. (a) Describe, using drawings, a classification of periodontal pockets.

5 (b) For which type or class of pockets is displacement pack particularly useful in treatment - why?

5 3. A patient is requested to tap back teeth together rapidly and forcefully. The resultant sound is vague and dull. List possible reasons.

Second Year Dental Hygiene

PHYSIOLOGY

No paper available

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RADIOGRAPHY

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SOCIOLOGY

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